Completed Pollution Prevention Project Case Study

United States Department of Energy
Office of Environmental Management
Fact Sheet

Pu-238 Residue Solidification Process

Los Alamos National Laboratory

Original Problem

Acidic and basic Pu-238 contaminated liquids are received at NMT-9 so that the residual plutonium can be removed and solidified. The pH of the initial feed must be approximately 4, so nitric acid or sodium hydroxide solution often has to be added to the waste, more than doubling the volume of liquid received initially. The paper filters that were used for catching the precipitate often failed, and the filtrate had to be treated again when this happened.

The Project Solution

Since both acidic and basic liquids contaminated with Pu-238 were being generated and sent through the plutonium recovery process, the NMT-9 team decided to try mixing exact quantities of the two streams together to produce the proper initial pH. A degradation resistant polypropylene filter was added to the paper filter, and the need for retreatment disappeared.

Value of Improvement

The new method of recovering Pu-238 requires about 50% less time, saving 40 hours worth of effort every month. The new process cuts the production of TRU waste by 125 Liters per month, a reduction of over 50%. The waste minimization due to the new process saves $150,000 in treatment costs annually.

Lifecycle Waste Reduction	
Lifecycle Waste Reduction	1500 L / year
Commencement Date	1999
Project Useful Life (Years)	Indefinite

DOE Monetary Benefits	
Total Project Cost	NA
Lifecycle Savings	$150,000 / year
Return on Investment	NA

Benefits At-A-Glance

- The refined process cuts TRU waste production over 50% and saves $150,000 per year in treatment costs.
- Requires 50% less time, saving 40 hours per month.
- Minimizes the volume of chemicals that must be added to the waste during the recovery process.

Completed Pollution Prevention Project Case Study

Pu-238 Residue Solidification Process

Los Alamos National Laboratory

Summary Data	
Priority Area:	Waste Minimization Projects
Project Type:	Source Reduction
Total Project Cost:	NA
Lifecycle Savings:	$150,000 per year
Implementing Group:	NMT-9
Benefiting Group:	NMT-9
Useful Life Years:	Indefinite
Return on Investment:	NA
Lifecycle Waste Reduction:	1500 Liters of TRU liquid waste per year
Project Contact:	Bob Grundemann
Phone:	(505)665-0487
Email:	rgrundemann@lanl.gov

Building Upon An Office of Science and Technology Demonstration Success